

POWER MIRROR SYSTEMS

TABLE OF CONTENTS

	page		page
EXTERIOR MIRRORS	1	INTERIOR MIRRORS	5

EXTERIOR MIRRORS

TABLE OF CONTENTS

	page		page
GENERAL INFORMATION		DIAGNOSIS AND TESTING	
INTRODUCTION	1	POWER MIRROR SYSTEM	2
POWER MIRROR SYSTEM	1	REMOVAL AND INSTALLATION	
DESCRIPTION AND OPERATION		POWER MIRROR SWITCH	3
POWER MIRROR	1	POWER MIRROR	4
POWER MIRROR SWITCH	2		

GENERAL INFORMATION

INTRODUCTION

Power operated outside rear view mirrors are an available factory-installed option on this model. Heated outside power mirrors are an available factory-installed option on quad cab models that are also equipped with the optional rear window defogger. Refer to 8W-62 - Power Mirrors in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

POWER MIRROR SYSTEM

The power operated or power operated and heated outside rear view mirrors allow the driver to adjust both outside mirrors electrically from the driver side front seat position by operating a switch on the driver side front door trim panel. The power mirrors receive a non-switched battery feed through a fuse in the junction block so that the system will remain operational, regardless of the ignition switch position.

The heated mirror option is available only on quad cab models with the rear window defogger option. The heated mirrors include an electric heating grid behind the mirror glass in each outside mirror, which can clear the mirror glass of ice, snow, or fog. The heating grid receives fused battery current through the relay integral to the rear window defogger switch only when the ignition switch is in the On position, and the rear

window defogger system is turned on. Refer to Rear Window Defogger System in Group 8N - Electrically Heated Systems for more information.

Following are general descriptions of the major components in the power mirror system. Refer to the owner's manual in the vehicle glove box for more information on the features, use and operation of the power mirror system.

DESCRIPTION AND OPERATION

POWER MIRROR

Each power mirror head contains two electric motors, two drive mechanisms, and the mirror glass. One motor and drive controls mirror up-and-down movement, and the other controls right-and-left movement.

The power mirrors in vehicles equipped with the available heated mirror system option also include an electric heating grid located behind the mirror glass. This heating grid is energized by the relay integral to the rear window defogger switch only when the ignition switch is in the On position, and the rear window defogger system is turned on. Refer to Rear Window Defogger System in Group 8N - Electrically Heated Systems for more information.

The power mirror assembly cannot be repaired. If any component of the power mirror unit is faulty or

DESCRIPTION AND OPERATION (Continued)

damaged, the entire power mirror unit must be replaced.

POWER MIRROR SWITCH

Both the right and left power outside mirrors are controlled by a single multi-function switch unit located on and mounted to the upper flag area of the driver side door trim panel. The switch knob is rotated clockwise (right mirror control), or counter-clockwise (left mirror control) to select the mirror to be adjusted. The switch knob is then moved in a joystick fashion to control movement of the selected mirror up, down, right, or left.

The power mirror switch cannot be repaired and, if faulty or damaged, it must be replaced. The power mirror switch knob is available for service replacement.

DIAGNOSIS AND TESTING**POWER MIRROR SYSTEM**

For circuit descriptions and diagrams, refer to 8W-62 - Power Mirrors in Group 8W - Wiring Diagrams.

(1) Check the fuses in the Power Distribution Center (PDC) and the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse(s).

(2) Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the PDC as required.

(3) Disconnect and isolate the battery negative cable. Remove the driver side door trim panel and unplug the wire harness connector from the power mirror switch. Connect the battery negative cable. Check for battery voltage at the fused B(+) circuit cavity in the door wire harness half of the power mirror switch wire harness connector. If OK, go to Step 4. If not OK, repair the open circuit to the junction block as required.

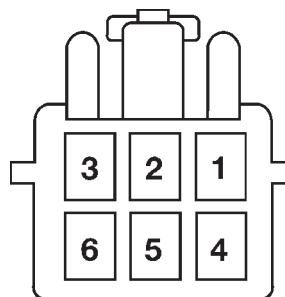
(4) Disconnect and isolate the battery negative cable. Check for continuity between the ground circuit cavity in the door wire harness half of the power mirror switch wire harness connector and a good ground. There should be continuity. If OK, go to Step 5. If not OK, repair the circuit to ground as required.

(5) If the problem being diagnosed is an inoperative power mirror electric heating grid, proceed as follows. If not, go to Step 8. Disconnect and isolate the battery negative cable. Remove the front door trim panel on the side of the vehicle with the inoperative mirror heating grid. Unplug the wire harness connector at the mirror. Check for continuity between the ground circuit cavity in the body half of the power mirror wire harness connector and a good

ground. If OK, go to Step 6. If not OK, repair the open circuit to ground as required.

(6) Connect the battery negative cable. Turn the ignition switch to the On position. Turn on the rear window defogger system. Check for battery voltage at the rear window defogger relay output circuit cavity in the body half of the power mirror wire harness connector. If OK, go to Step 7. If not OK, repair the open circuit to the rear window defogger relay as required.

(7) Check for continuity between the ground circuit and the rear window defogger relay output circuit cavities in the mirror half of the power mirror wire harness connector. There should be continuity. If not OK, replace the faulty power mirror. If OK, check the resistance through the electric heating grid circuit (Fig. 1). Correct resistance through the electric heating grid should be from 6 to 8.2 ohms when measured at an ambient temperature of 21° C (70° F). If not OK, replace the faulty power mirror.



OUTSIDE MIRROR HEATING GRID TEST		
CAVITY	FUNCTION	*RESISTANCE
4	FUSED REAR WINDOW DEFOGGER RELAY OUTPUT	6.0 TO 8.2 OHMS
5	GROUND	
*WHEN MEASURED AT AN AMBIENT TEMPERATURE OF 21°C (70°F)		

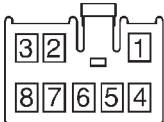
80bce959

Fig. 1 Outside Mirror Heating Grid Test

(8) Check the power mirror switch continuity as shown in (Fig. 2). If OK, go to Step 9. If not OK, replace the faulty switch.

(9) Unplug the wire harness connector at the inoperative power mirror. Use two jumper wires, one connected to a 12-volt battery feed, and the other connected to a good body ground. See the Power Mirror Test chart for the correct jumper wire connections to the power mirror half of the power mirror wire harness connector (Fig. 3). If the power mirror(s) do not respond as indicated in the chart, replace the

DIAGNOSIS AND TESTING (Continued)

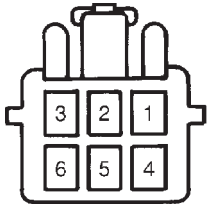


MIRROR SELECTOR KNOB IN “L” POSITION	
MOVE LEVER	CONTINUITY BETWEEN
UP	Pins 3 and 8, 1 and 7, 4 and 7
RIGHT	Pins 3 and 7, 2 and 8, 5 and 8
DOWN	Pins 3 and 7, 1 and 8, 4 and 8
LEFT	Pins 3 and 8, 2 and 7, 5 and 7
MIRROR SELECTOR KNOB IN “R” POSITION	
MOVE LEVER	CONTINUITY BETWEEN
UP	Pins 6 and 8, 1 and 7, 4 and 7
RIGHT	Pins 6 and 7, 2 and 8, 4 and 8
DOWN	Pins 6 and 7, 1 and 8, 4 and 8
LEFT	Pins 6 and 8, 2 and 7, 5 and 7

80a9b33a

Fig. 2 Power Mirror Switch Continuity

faulty power mirror assembly. If the power mirror(s) do respond as indicated in the chart, repair the circuits between the power mirror and the power mirror switch for a short or open as required.



		Left or Right Mirror
12 Volts	Ground	MIRROR MOVEMENT
Pin 3	Pin 1	UP
Pin 1	Pin 3	DOWN
Pin 2	Pin 1	LEFT
Pin 1	Pin 2	RIGHT

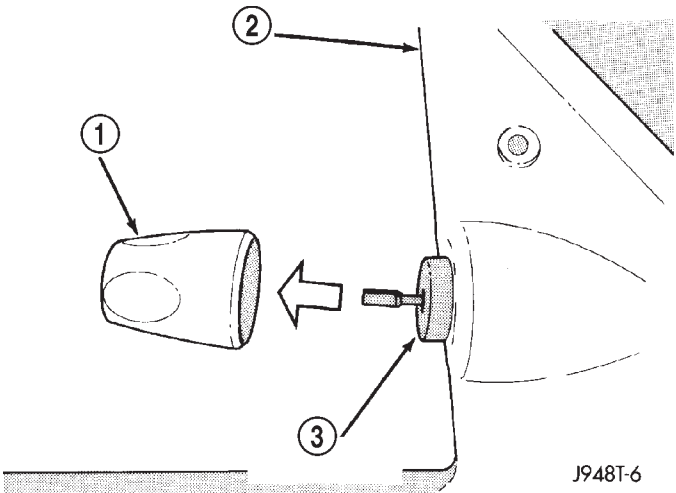
80a9b33b

Fig. 3 Power Mirror Test

REMOVAL AND INSTALLATION

POWER MIRROR SWITCH

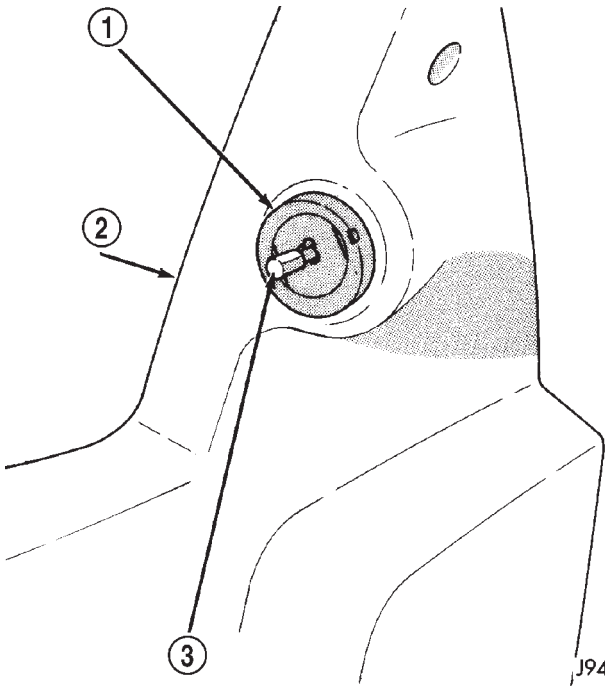
- (1) Disconnect and isolate the battery negative cable.
- (2) Pull the power mirror switch control knob rearward to remove it from the switch stem (Fig. 4).
- (3) Remove the nut that secures the power mirror switch to the driver side door trim panel (Fig. 5).



J948T-6

Fig. 4 Power Mirror Switch Control Knob Remove/Install - Typical

- 1 - SWITCH CONTROL KNOB
- 2 - DOOR TRIM PANEL
- 3 - POWER MIRROR SWITCH



J948T-5

Fig. 5 Power Mirror Switch Nut - Typical

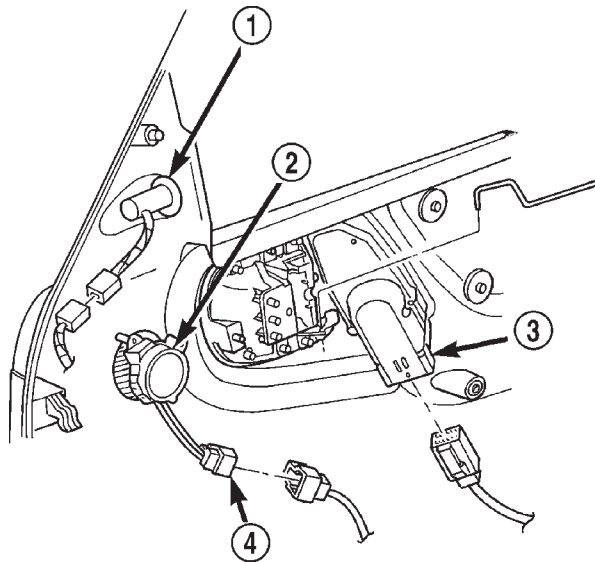
- 1 - SWITCH RETAINING NUT
- 2 - DOOR TRIM PANEL
- 3 - POWER MIRROR SWITCH

(4) Remove the trim panel from the front door. Refer to **Front Door Trim Panel** in the index of this service manual for the location of the proper front door trim panel service procedures.

REMOVAL AND INSTALLATION (Continued)

(5) Pull the front door trim panel away from the inner door panel far enough to access the power mirror switch wire harness connector.

(6) Unplug the power mirror switch wire harness connector (Fig. 6).



80b27c54

Fig. 6 Door Trim Panel Wire Harness Connectors

- 1 - POWER MIRROR SWITCH
- 2 - TWEETER
- 3 - POWER WINDOW SWITCH
- 4 - WIRE HARNESS CONNECTOR

(7) Remove the power mirror switch from the back of the front door trim panel.

(8) Reverse the removal procedures to install.

POWER MIRROR

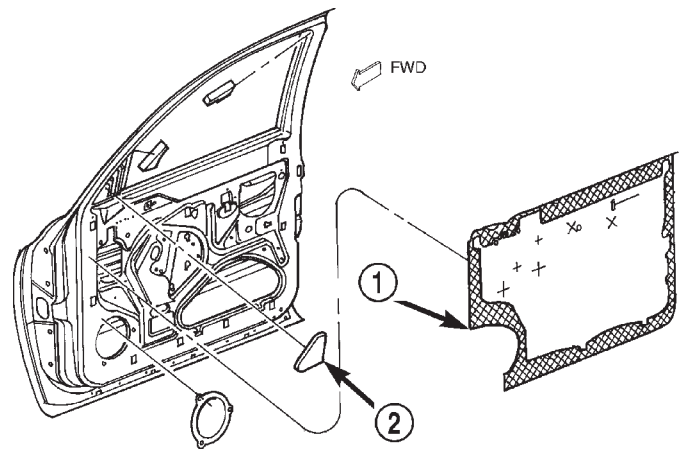
(1) Disconnect and isolate the battery negative cable.

(2) Remove the trim panel from the front door. Refer to **Front Door Trim Panel** in the index of this service manual for the location of the proper front door trim panel service procedures.

(3) Remove the mirror flag seal from the inner door panel (Fig. 7).

(4) Unplug the wire harness connector from the power mirror (Fig. 8).

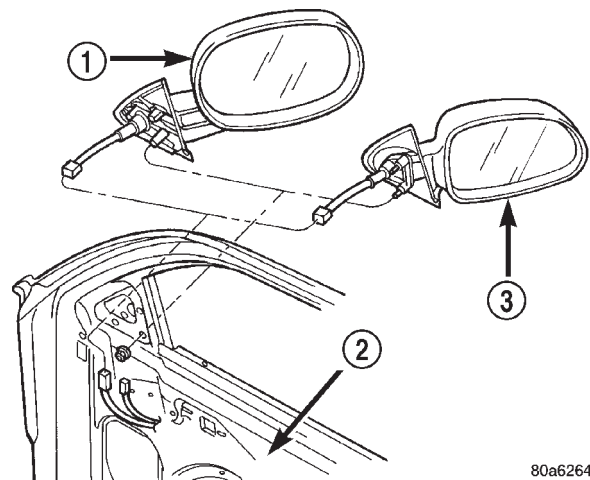
(5) Remove the three nuts that secure the power mirror to the inner door panel.



80a62642

Fig. 7 Mirror Flag Seal Remove/Install

- 1 - WATER DAM
- 2 - MIRROR FLAG SEAL



80a62648

Fig. 8 Power Mirror Remove/Install

- 1 - ELECTRIC FOLD AWAY SIDEVIEW MIRROR
- 2 - DOOR
- 3 - ELECTRIC SIDEVIEW MIRROR

(6) Unseat the power mirror wire harness grommet by pushing it out through the hole in the door flag from the inside.

(7) Pull the mirror from the outside of the door while feeding the wire harness, grommet, and connector out through the hole from the inside of the door.

(8) Reverse the removal procedures to install. Tighten the mirror mounting nuts to 7.5 N·m (65 in. lbs.).

INTERIOR MIRRORS

TABLE OF CONTENTS

	page		page
GENERAL INFORMATION		DIAGNOSIS AND TESTING	
INTRODUCTION	5	AUTOMATIC DAY/NIGHT MIRROR	5
AUTOMATIC DAY/NIGHT MIRROR SYSTEM	5	REMOVAL AND INSTALLATION	
DESCRIPTION AND OPERATION		AUTOMATIC DAY/NIGHT MIRROR	6
AUTOMATIC DAY/NIGHT MIRROR	5		

GENERAL INFORMATION

INTRODUCTION

An automatic dimming inside day/night rear view mirror is an available factory-installed option on this model. Refer to 8W-44 - Interior Lighting in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

AUTOMATIC DAY/NIGHT MIRROR SYSTEM

The automatic day/night mirror system is able to automatically change the reflectance of the inside rear view mirror in order to reduce the glare of headlamps approaching the vehicle from the rear. The automatic day/night rear view mirror receives battery current through a fuse in the junction block only when the ignition switch is in the On position.

A switch located on the bottom of the automatic day/night mirror housing allows the vehicle operator to select whether the automatic dimming feature is operational. When the automatic day/night mirror is turned on, the mirror switch is lighted by an integral Light-Emitting Diode (LED). The mirror will automatically disable its self-dimming feature whenever the vehicle is being driven in reverse.

Following is a general description of the automatic day/night mirror. Refer to the owner's manual in the vehicle glove box for more information on the features, use and operation of the automatic day/night mirror system.

DESCRIPTION AND OPERATION

AUTOMATIC DAY/NIGHT MIRROR

The automatic day/night mirror uses a thin layer of electrochromic material between two pieces of conductive glass to make up the face of the mirror. When the mirror switch is in the On position, two photocell sensors are used by the mirror circuitry to monitor external light levels and adjust the reflectance of the mirror.

The ambient photocell sensor is located on the forward-facing (windshield side) of the rear view mirror housing, and detects the ambient light levels outside of the vehicle. The headlamp photocell sensor is located inside the rear view mirror housing behind the mirror glass and faces rearward, to detect the level of the light being received at the rear window side of the mirror. When the circuitry of the automatic day/night mirror detects that the difference between the two light levels is too great (the light level received at the rear of the mirror is much higher than that at the front of the mirror), it begins to darken the mirror.

The automatic day/night mirror circuitry also monitors the transmission using an input from the backup lamp circuit. The mirror circuitry is programmed to automatically disable its self-dimming feature whenever it senses that the transmission backup lamp circuit is energized.

The automatic day/night mirror is a completely self-contained unit and cannot be repaired. If faulty or damaged, the entire mirror assembly must be replaced.

DIAGNOSIS AND TESTING

AUTOMATIC DAY/NIGHT MIRROR

For circuit descriptions and diagrams, refer to 8W-44 - Interior Lighting in Group 8W - Wiring Diagrams.

(1) Check the fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Turn the ignition switch to the On position. Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the ignition switch as required.

(3) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Unplug the wire harness connector from the automatic day/night mirror (Fig. 1). Connect the battery negative cable. Turn the ignition switch to the On

DIAGNOSIS AND TESTING (Continued)

position. Check for battery voltage at the fused ignition switch output (run/start) circuit cavity of the automatic day/night mirror wire harness connector. If OK, go to Step 4. If not OK, repair the open circuit to the junction block as required.

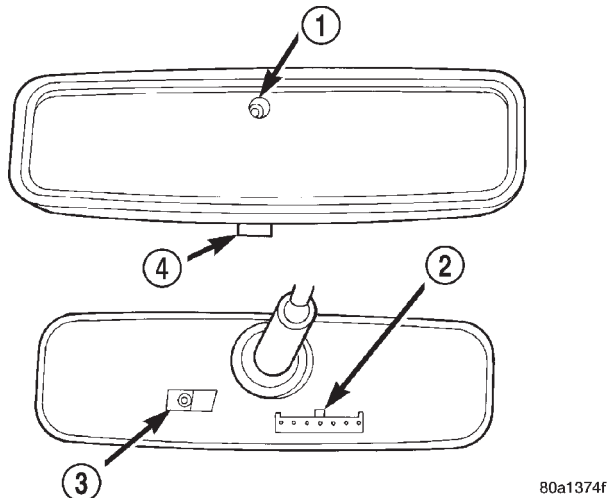


Fig. 1 Automatic Day/Night Mirror

- 1 - REAR FACING SENSOR
- 2 - CONNECTOR
- 3 - FORWARD FACING SENSOR
- 4 - SWITCH

(4) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Check for continuity between the ground circuit cavity of the automatic day/night mirror wire harness connector and a good ground. There should be continuity. If OK, go to Step 5. If not OK, repair the circuit to ground as required.

(5) Connect the battery negative cable. Turn the ignition switch to the On position. Set the parking brake. Place the transmission gear selector lever in the Reverse position. Check for battery voltage at the backup lamp switch output circuit cavity of the automatic day/night mirror wire harness connector. If OK, go to Step 6. If not OK, repair the open circuit as required.

(6) Turn the ignition switch to the Off position. Disconnect the battery negative cable. Plug in the automatic day/night mirror wire harness connector. Connect the battery negative cable. Turn the ignition switch to the On position. Place the transmission gear selector lever in the Neutral position. Place the mirror switch in the On (the LED in the mirror switch is lighted) position. Cover the forward facing ambient photocell sensor to keep out any ambient light.

NOTE: The ambient photocell sensor must be covered completely, so that no light reaches the sensor. Use a finger pressed tightly against the sensor, or cover the sensor completely with electrical tape.

(7) Shine a light into the rearward facing headlamp photocell sensor. The mirror glass should darken. If OK, go to Step 8. If not OK, replace the faulty automatic day/night mirror unit.

(8) With the mirror glass darkened, place the transmission gear selector lever in the Reverse position. The mirror should return to its normal reflectance. If not OK, replace the faulty automatic day/night mirror unit.

REMOVAL AND INSTALLATION

AUTOMATIC DAY/NIGHT MIRROR

(1) Disconnect and isolate the battery negative cable.

(2) Unplug the wire harness connector from the automatic day/night mirror (Fig. 2).

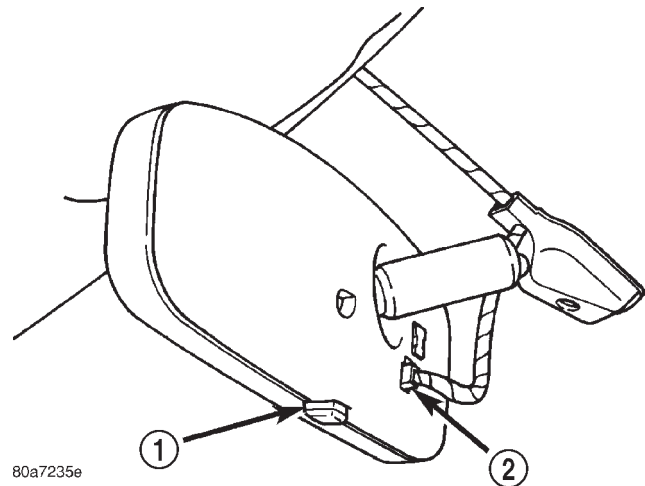


Fig. 2 Automatic Day/Night Mirror Remove/Install

- 1 - ON/OFF SWITCH
- 2 - ELECTRICAL CONNECTOR

(3) Remove the set screw that secures the automatic day/night mirror to the windshield support button.

(4) Push the automatic day/night mirror upwards far enough for the mounting bracket to clear the support button and remove the mirror from the windshield support button.

(5) Reverse the removal procedures to install. Tighten the mounting screw to 1.7 N·m (15 in. lbs.).